

Headquarters U.S. Air Force

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Contagious Casualty Management



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**Mr Paul Clark
AFMSA/SGPF
TTX for CCM WG
30 Aug 04**

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Objectives

- 1. Develop a capability to handle contagious casualties in a deployed (CONUS/OCONUS) setting**
- 2. Develop TTPs, UTCs, equipment package, personnel package**



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Rules of Engagement

- **Don't try and solve problems during TTX**
- **Do identify requirements for a CCM**
- **Try and keep discussions to NMT 10 min**
- **No sidebars**



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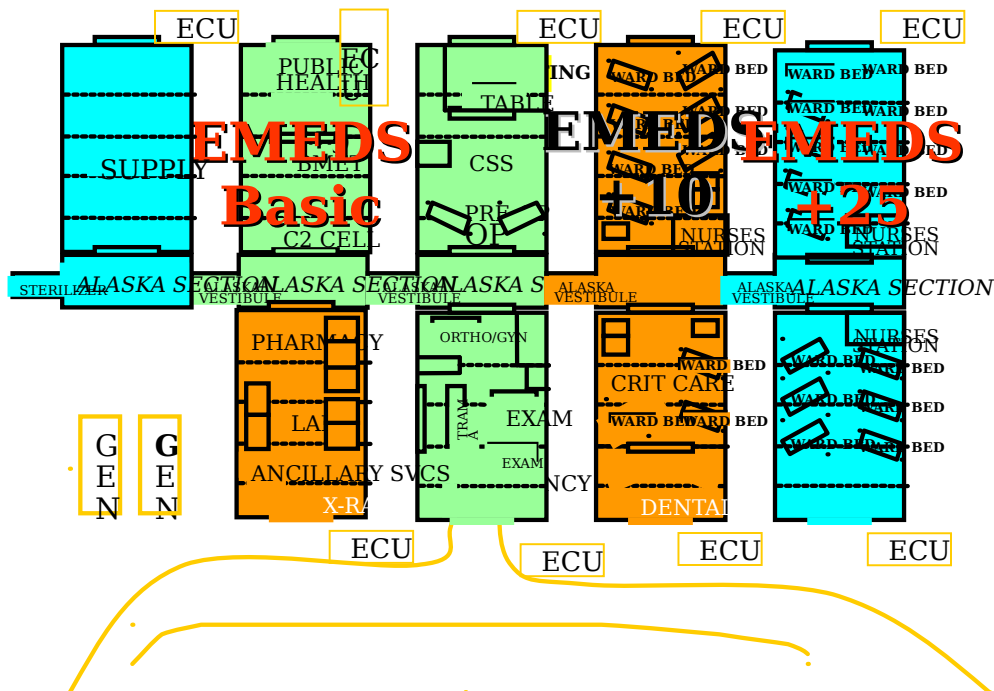
Purple Region

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Deployed Setting



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Homeland Defense

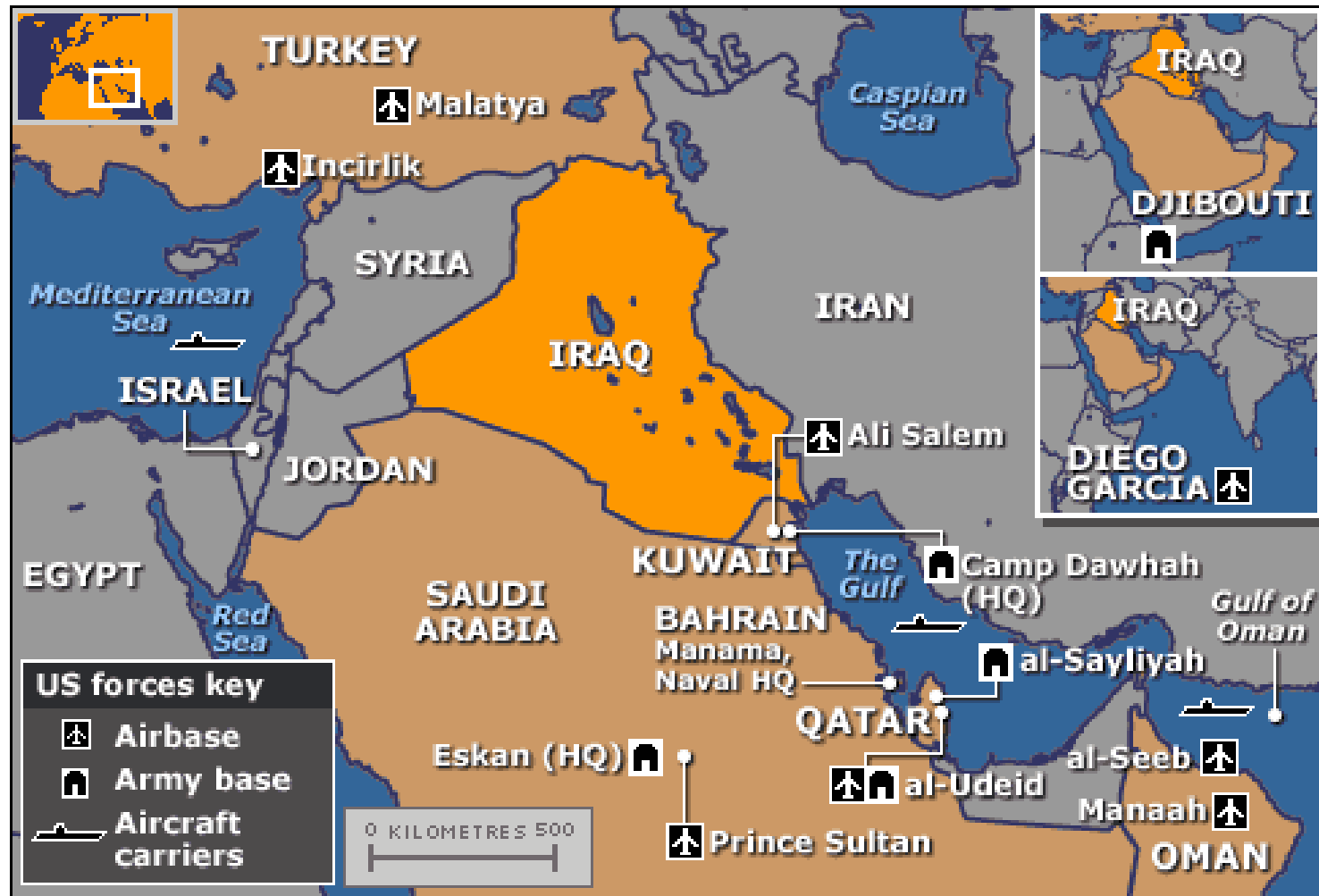


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Welcome to the Neighborhood



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Fast Facts

- **24 EMEDS in 12 Countries**
- **214 Beds Supporting 65,000 troops**
- **Five Chemically Protected EMEDS**
- **1,822 Medics**



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Current EMEDS Capability

- **25 Med-Surg Beds**
- **2 Operating Rooms**
- **ICU Holding**
- **Casualty Receiving**
- **Serving PAR of 6000**



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Emerging Contagious Disease



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Patient Logs

Thursday - 19 May - 0800

Wednesday - 18 May: As reported by Deployed MDG

- 7 upper airway infection, 2 pneumonia, 6 fatigue, chills, fever, 6 headache, 8 abdominal pain, 4 ear cough, 6 injuries from
- 1 of these patients diagnosed with viral syndrome and admitted





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Morning Rounds

Thursday - 19 May - 1000

- **2 patients complaining of severe headaches without neck stiffness and blurred vision**
- **6 with sudden onset of chills and flu-like symptoms to include a cough, swollen glands (generalized lymphadenopathy without lymphadenitis)**
- **Another 8 with severe upper respiratory infection**
- **Almost all have elevated temperatures**



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Responses from Coalition Hospitals

- **Two of the Host Nation hospitals and two army medical units queried by the Public Health Office report a small number of patients present symptoms, such as fever, high temperatures, and pneumonia.**
- **All of the patients have had some manner of contact with base personnel in the past several days.**



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EMEDS/Clinic Reports

Thursday - 19 May - 1700

- **Numerous patients (~30) complaining of high fever, chills, headache, cough with watery/bloody sputum**
- **8 new admissions with these symptoms**





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Decision for Deployment

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Patient Death

Thursday - 19 May - 2100

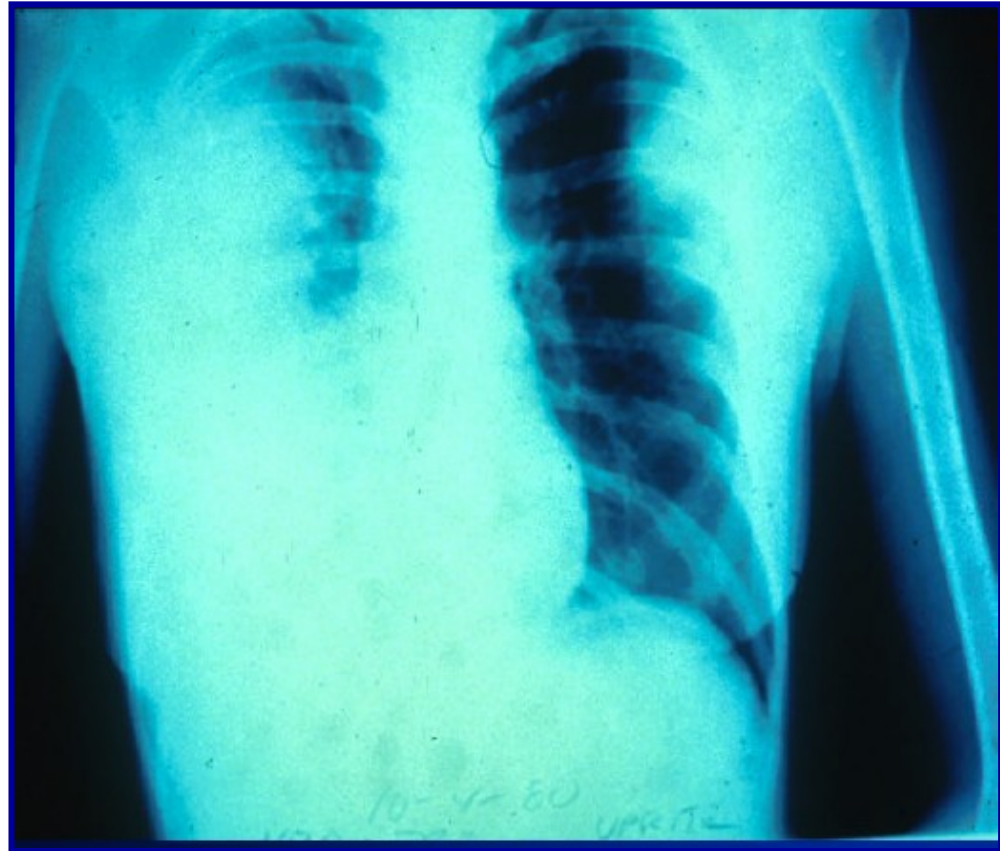
- **Airman (dining hall server) admitted at 0745 that morning dies from respiratory failure secondary to left-side heart failure**
 - **Presented fever, vomiting, diarrhea**
 - **Tachycardia (increased heart rate)**
 - **Progressive signs of broncho and lobar pneumonia**
 - **Severe cough and Grade I Dyspnea (labored breathing)**
 - **Coagulation abnormalities, vascular necrosis**



Chest X-Ray Results

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- **Aggressive lobar and multilobar pneumonia**
- **Fibropurulent pleuritis**
- **Pulmonary edema**





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Laboratory



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Laboratory Results: Sputum Sample

A sputum sample is taken from one of the upper airway cases, and this is sent for gram stain and culture. A gram stain is subsequently performed by the laboratory technician in the afternoon. Nothing is noticed outside of normal throat flora.



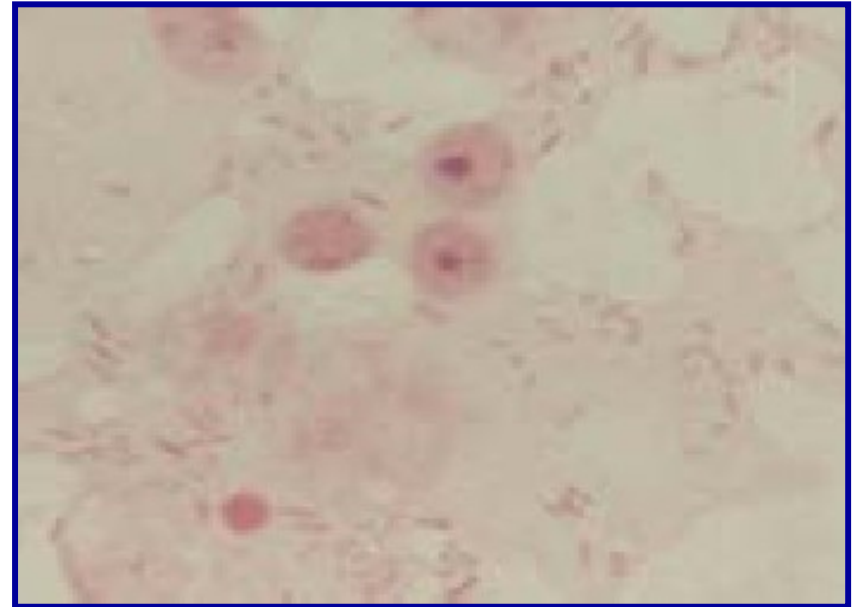


Laboratory Results: Throat Swab

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A transtracheal throat swab is taken from the reddened throat of one of the upper airway cases, and this is sent for gram stain and culture. A gram stain is subsequently performed by the laboratory technician in the afternoon.

Gram negative rods are noticed.



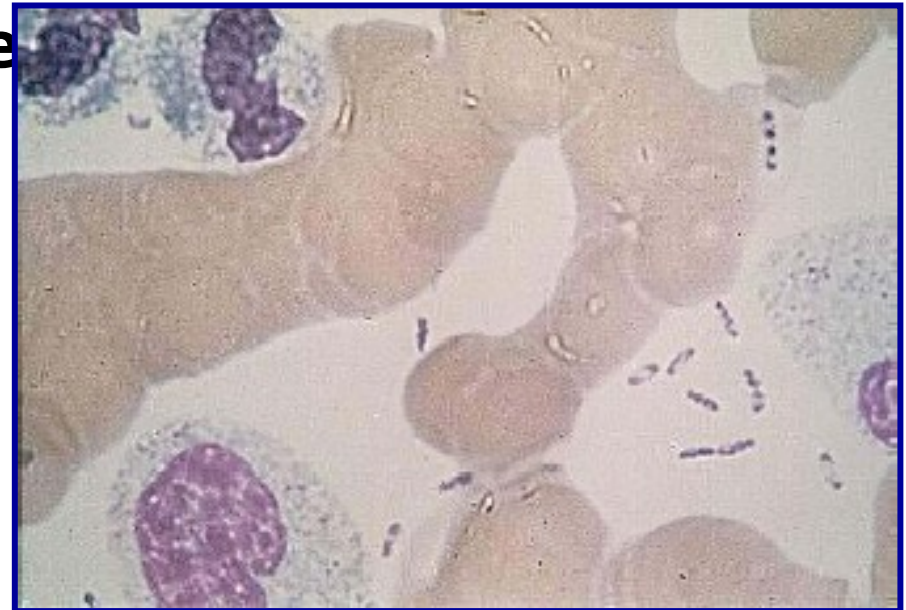


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Laboratory Results: ***Blood***

A blood smear is taken from a patient and sent for stain and culture. A Wright-Giemsa stain is subsequently performed by the laboratory technician.

Bipolar staining cells are





Laboratory Results

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Gram stains are performed on other patients. The bipolar safety pin morphology of the gram negative rods is now noted in specimens from several other severely ill patients.

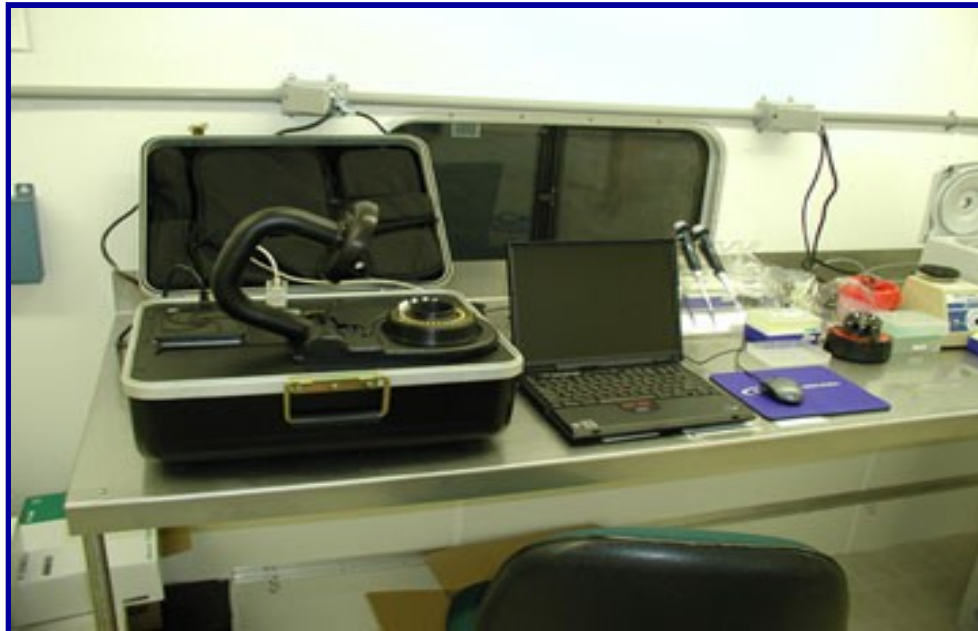
One of the lab technicians makes a presumptive identification of *Yersinia pestis*.



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RAPIDS

The RAPIDS (Ruggedized Advanced Pathogen Identification Device) has produced a positive reading for *Yersinia pestis*.



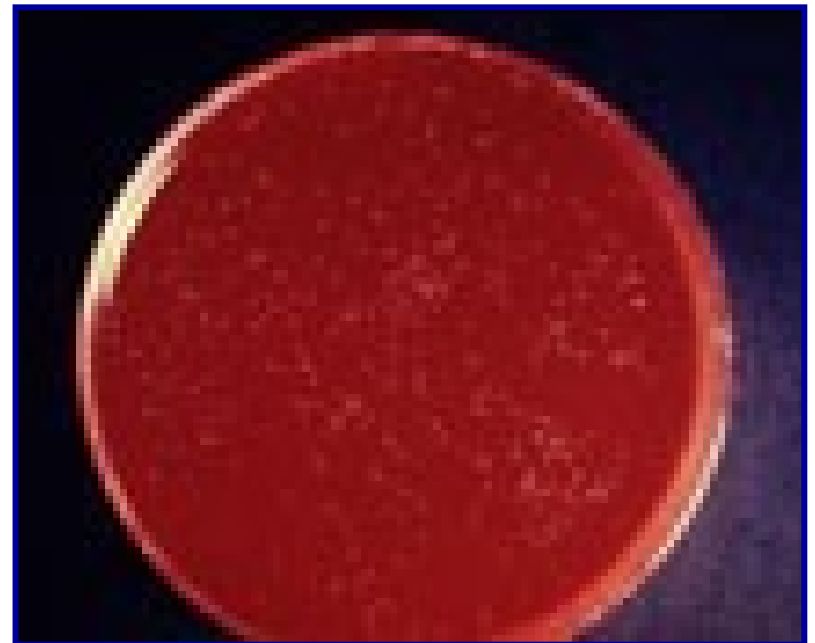


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Culture Results

48 hours

After 48 hours of growth on blood agar, lab technicians notice colonies with an irregular “fried egg” appearance consistent with *Yersinia pestis*.



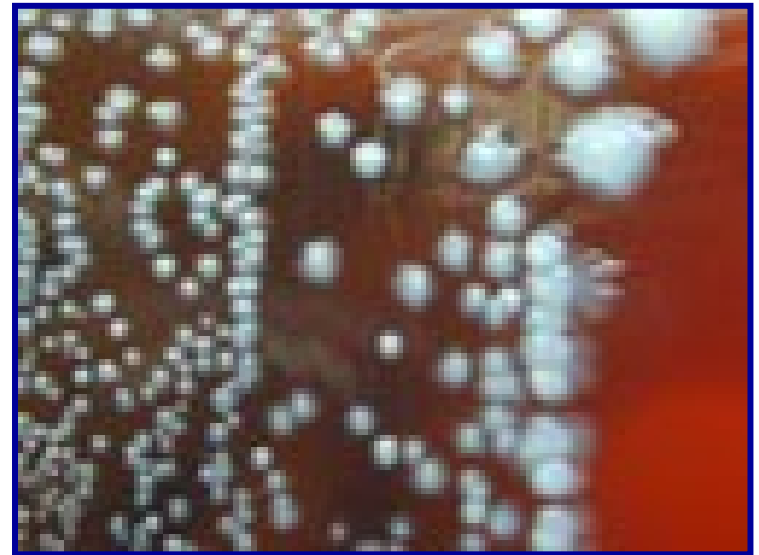


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Culture Results

72 hours

After 72 hours of growth on blood agar, lab technicians observe the “hammered copper” morphology of the colonies consistent with *Yersinia pestis*.

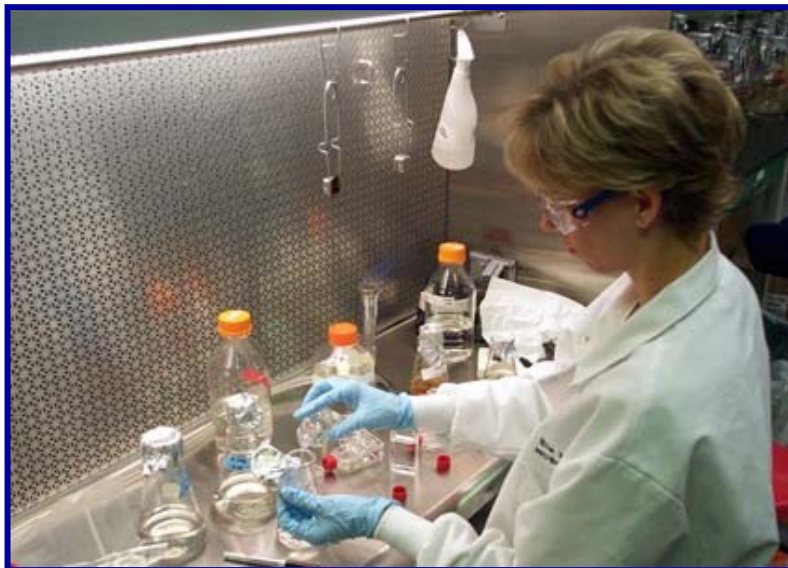




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Confirmation

**Samples sent to the TAML
(Theatre Army Medical Lab) for
analysis have tested positive for
Yersinia pestis.**



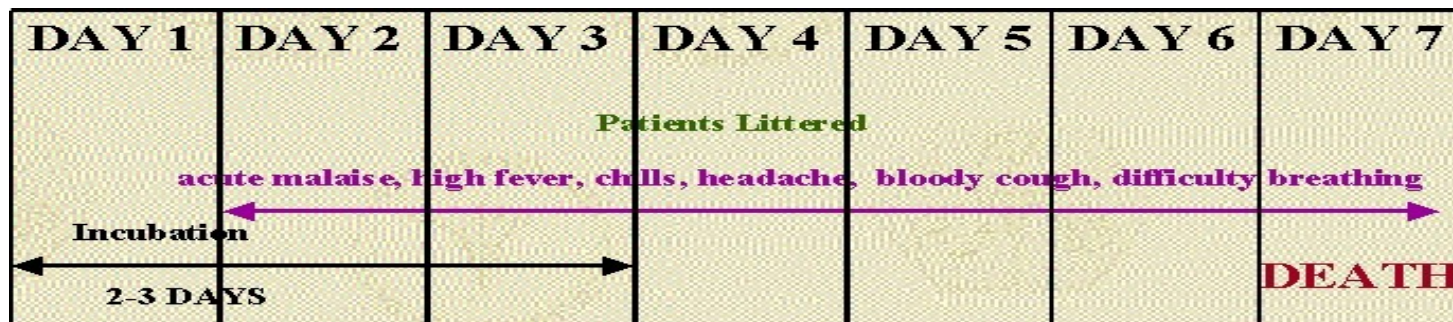


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Pneumonic Plague

Yersinia pestis

- Type of agent: bacterial
- Primary or secondary (incubation 2-3 days)
- Acute onset—high fever, chills, malaise
 - Cough with bloody sputum within 24 hrs
 - Pneumonia progresses rapidly—SOB, stridor, cyanosis
- Respiratory failure, circulatory collapse, bleeding diathesis
- Rapidly fatal
- Most won't survive unless Rx'd within 18 hours of infection
- CXR variable—bronchopneumonia
- Contagious (resp. droplet)





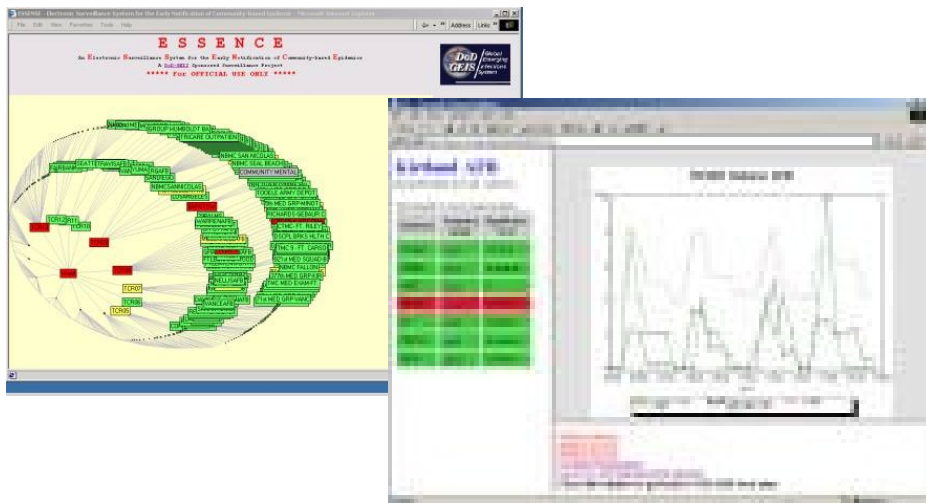
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Surveillance



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Medical Surveillance



- **Medical/CC of the EMEDS has asked the CCM team lead if they are going to take the lead on medical surveillance/epi investigations since they deal with contagious diseases?**





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Animal Control

A representative from the Centers for Disease Control (CDC) states that the outbreak could have infected the local animal population and could potentially continue to serve as a reservoir for the disease.





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Security Issues



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Security Impact



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Security/Defense Forces

Numerous members of the Security/Defense Forces are concerned that they will be exposed to plague while conducting their mission.





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Demonstrations

Security Forces report that demonstrations outside the base are increasing in frequency and are showing potential for violence. National police are being overwhelmed and are not controlling the situation.





Quarantine Security

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- **The base commander has asked the medical commander “What security measures are needed for quarantine/contagious area”**
- **Where do we need to locate this quarantine/contagious area.placing the**

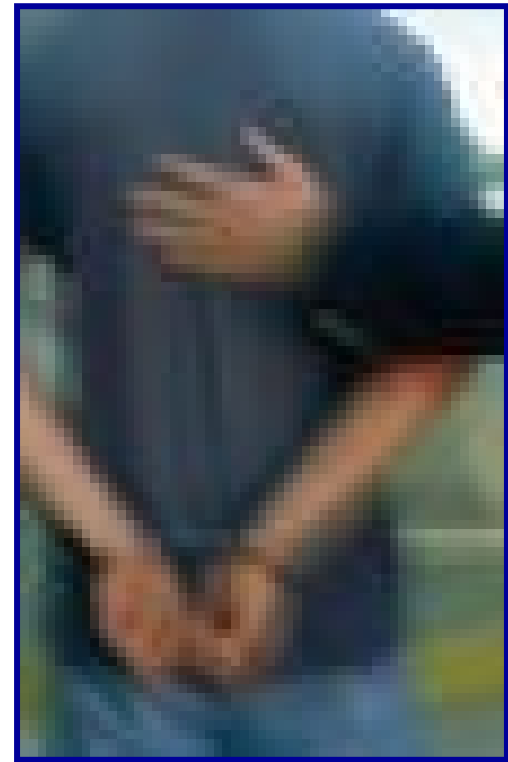




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Quarantine Violation

**Security Forces
report that they
have detained an
individual for
violating a
quarantine order.**





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Quarantine

A host nation worker at the dining facility on the base states that she is not sick and is leaving the base no matter what the United States says.





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Detainees

**Security Forces asks
for guidance on
protective measures
for detainees**





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Deployed Operations Group

**“What can we do to
protect our pilots and
maintainers?”**





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Dislocated Civilians

Large populations of host nation civilians are leaving the areas surrounding XXX Air Base.





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TRANSCOM

Base commander wants to know - “If TRANSCOM continues to make flights into XXX air base despite the outbreak, what precautions, if any, will be taken for visiting crews and transiting personnel.”





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Services

Due to attack on the dining facility, the feeding capacity on the base is being overwhelmed.





Message from ICRC

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**International
Committee of the Red
Cross reports that
several refugee camps
around the XXX air
base area are
experiencing plague
cases.**





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AMERICAN EMBASSY

- **A representative from CDC informs the Defense Attache that WHO is having difficulty managing and distributing antibiotics in country.**
- **He adds that WHO desires the USG serve as the inventory control point for all antibiotics in country and distribute it to volunteer organizations in accordance with WHO guidance.**



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Deployment



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Collective Protection

Units are asking if they need to house people or critical operations in collective protection shelters.





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MOPP Level



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Level A

- **Highest available level of respiratory, skin, and eye protection**
- **Pressure-demand, full face SCBA or pressure-demand, supplied-air respirator with escape SCBA**
- **Fully-encapsulated, chemical-resistant suit**
- **Inner chemical-resistant gloves**
- **Chemical-resistant safety boots/shoes**
- **Two-way radio communication**





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Level B

- **Same level of respiratory protection as Level A, but less skin protection**
- **Minimum level recommended for initial site entries until hazard has been identified**
- **Pressure-demand, full face SCBA or pressure-demand, supplied-air respirator with escape SCBA**
- **Chemical-resistant clothing**
- **Inner and outer chemical-resistant gloves**
- **Chemical-resistant safety boots/shoes**
- **Two-way radio communication**





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Level C

- **No respiratory protection;
minimal skin protection**
- **Full face, air-purifying,
canister-equipped respirator**
- **Chemical-resistant clothing**
 - **Overalls and long
sleeved jacket**
 - **Hooded chemical
splash suit**
- **Chemical-resistant Gloves**





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Level D

- **No respiratory protection; minimal skin protection**
- **Coveralls**
- **Safety boots/shoes**
- **Safety glasses**





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Vaccination

Team Chief for the CCM has asked Public Health for guidance on what standard vaccinations the CCM team members and subsequent follow on teams should have concerning the new mission that they have caring for contagious casualties.





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Team Make up

- **Base XXX is asking for assistance in dealing with what they suspect is a terrorist attack with a contagious disease. They have been told there is a new CCM team and would like to know what specialties are on this team and what equipment and supplies they have.**





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Laboratory

The lab is reporting that it is becoming swamped with requests for tests and that it is operating at 75% capacity due to illness of some of the lab techs.





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Laboratory Supplies

The lab is reporting that it does not have adequate supplies on-hand to meet the increased demands for both clinical and environmental testing.

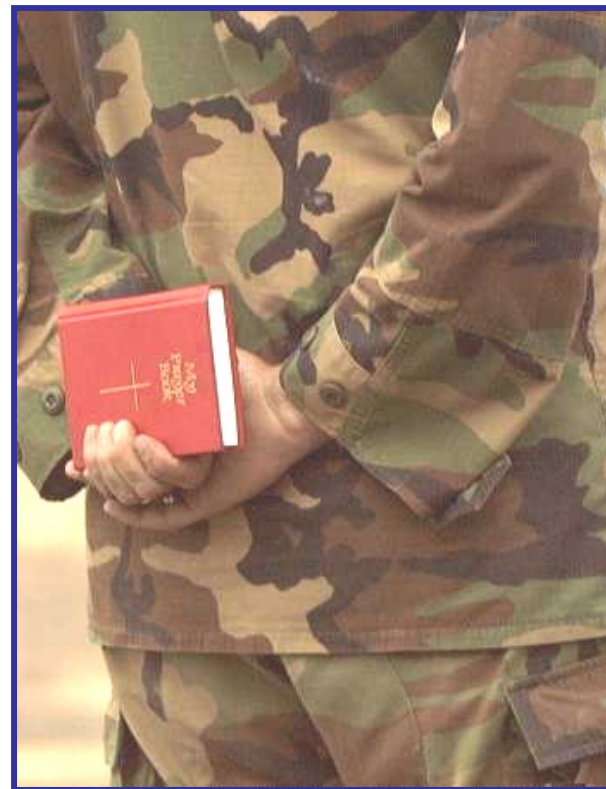




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Stress Management

Numerous calls coming in from persons that are not sick but are simply “scared out of their wits.” They want to know if there is counseling available that might help them deal with their stress.





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Behavioral Casualties

- **Behavioral casualties are overwhelming capabilities. One physician reports attending to more than 50 patients in 4 hours, and there was only one “possible” plague case among them**
- **He warns:**
 - **“Healthy patients” are risking infection just by coming to the hospital when there is no need**
 - **Behavioral casualties are impacting needed care**



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DISEASE CONTAINMENT PLAN



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Definitions

Isolation- The separation of a person or group **infected** with a communicable disease ,while such disease is in a communicable phase, from other people to prevent the spread of infection.

Quarantine- Compulsory detention or other restriction, including isolation, for purposes of preventing or limiting the spread of disease, or individuals or groups **reasonably believed to be infected** with a communicable disease, while such disease is in a communicable or pre-communicable phase.

Restriction of Movement- Limiting people's movement to **prevent or limit the transmission** of a communicable disease, including limiting ingress and egress to, from, or on a military installation, isolation, or quarantine.



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XXX FW Battle Staff Meeting

Wing Commander asks the PHEO for recommendations on how the outbreak will be contained. He is considering restrictions on movement of base personnel and activities.





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Wing Operations Center

“We have almost 8000 people on the Air Base, including military, civilians, contractors, and host nation workers. are we supposed to track status of all these people?”





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Billeting

All available housing space has been filled to capacity. Do we need to disperse people to lessen the threat of disease transmission.





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Infection Control

- **All cases:**
 - **Standard precautions**
- **Suspected pneumonic plague:**
 - **Droplet precautions for initial 48 hrs of Rx**
- **Confirmed pneumonic plague:**





Mass Prophylaxis Issues

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- **How is it distributed**
 - **UCCs**
- **Reception of supplies**
- **Packaging of meds**
- **Foreign Nationals/contractors? Do they receive**
- **Consent**
- **Priorities**
- **Tracking of who has gotten it**



Prophylaxis: Plague Contacts

Surveillance and chemoprophylaxis for one week

- **Doxycycline 100 mg po bid x 7 days**
- **Tetracycline 250-500 mg po bid x 7 days**
- **TMP/SMX DS po bid x 7 days
(pregnancy, pediatric age group,**

tetracycline allergy)



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Patient Administration

Patient administration reports that they are quickly running out of bed space. If the outbreak continues their facilities will overwhelmed





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TREAT IN PLACE/ TRANSPORT



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Standard of Care

Limitations

- **Limited ICU beds**
- **Limited ventilators**
- **Out patient vs. hospital admission**
- **Limited personnel**





Treatment of Plague

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1. Supportive therapy

- **I.V. crystalloids**
- **Hemodynamic monitoring**
- **Supplemental oxygen**



2. Antibiotic therapy—bubonic or pneumonic

- **Streptomycin (age-old favorite): 15 mg/kg i.m. bid**
- **Gentamycin: 2mg/kg i.v. then 1.0-1.5 mg/kg q8h (8-10 g/ml peak; troughs < 2 g/ml) OR q 24 hr dosing**
- **Sulfadiazine: 2-3 gm i.v. q12h**
- **Doxycycline: 200 mg i.v., then 100 mg i.v. q 12 hrs**
- **Tetracycline: 1.0 gm i.v. q12h**
- **Duration of Rx: 10 days**



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XX Medical Group

MDG reports that several of their personnel who were on duty are now showing signs of the same syndrome that infected the patients that were admitted that day.





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XXX Medical Group

Providers are reporting that routine infections are being multiplied by close quarters and increasing tensions.





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PPE for Transport

- **Transport crew asks if they need/should be wearing PPE when transporting contagious patients**





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Patient Evacuation?

“If the outbreak continues we are going to need to send patients by ground or air transport to medical facilities o local area.

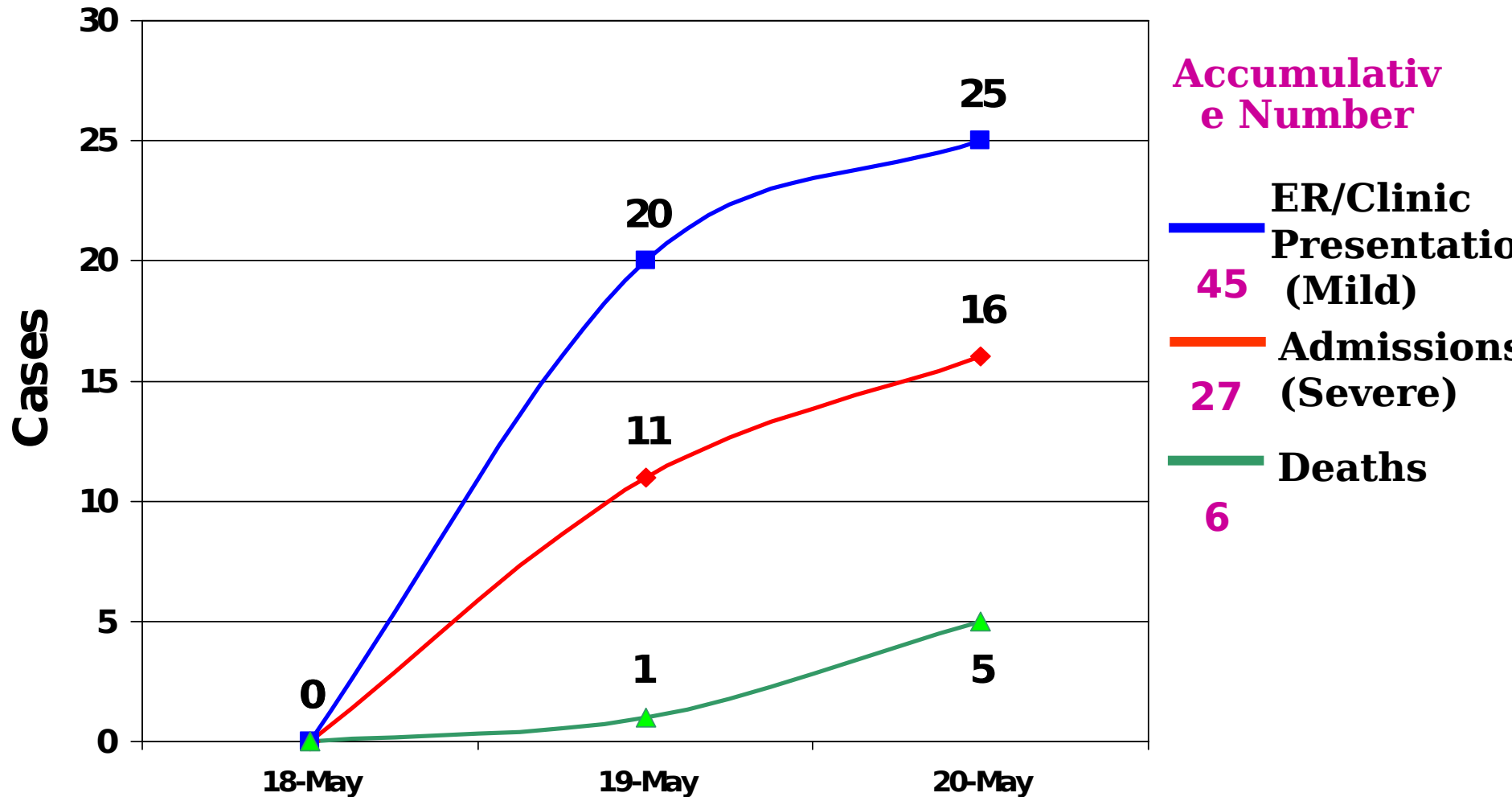


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Plague Cases - 20 May

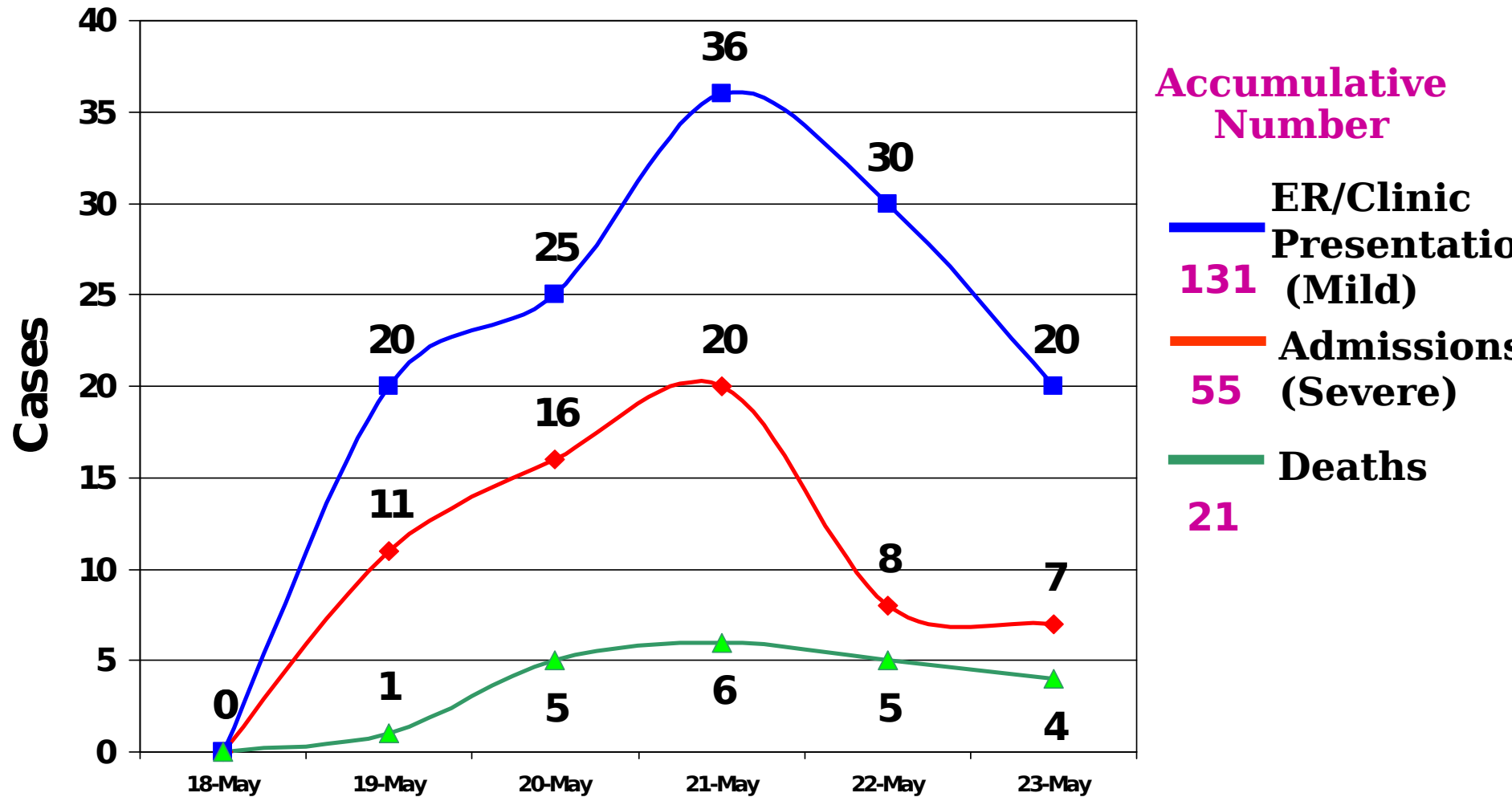
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Plague Cases - 23 May

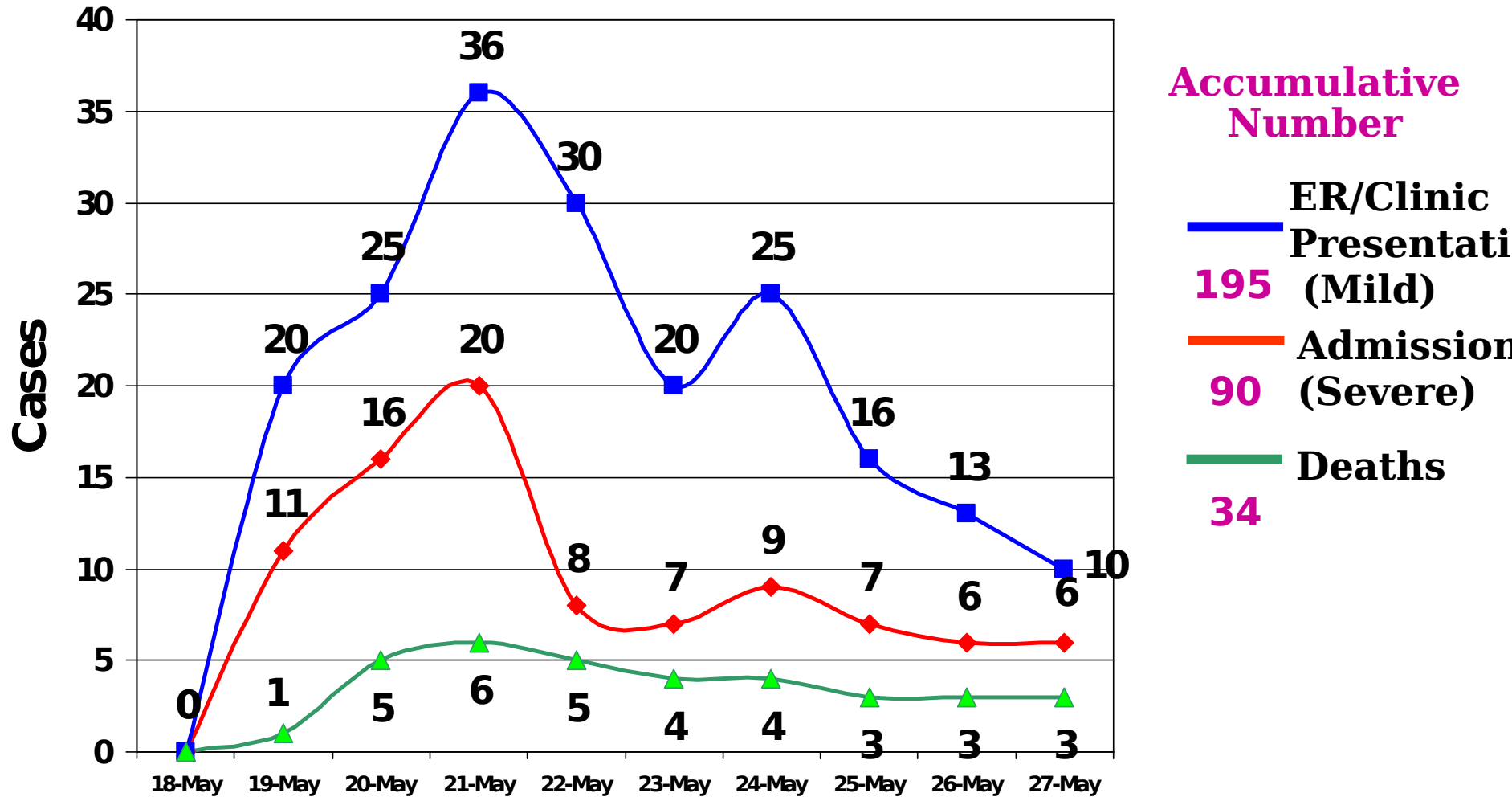
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Plague Cases - 27 May

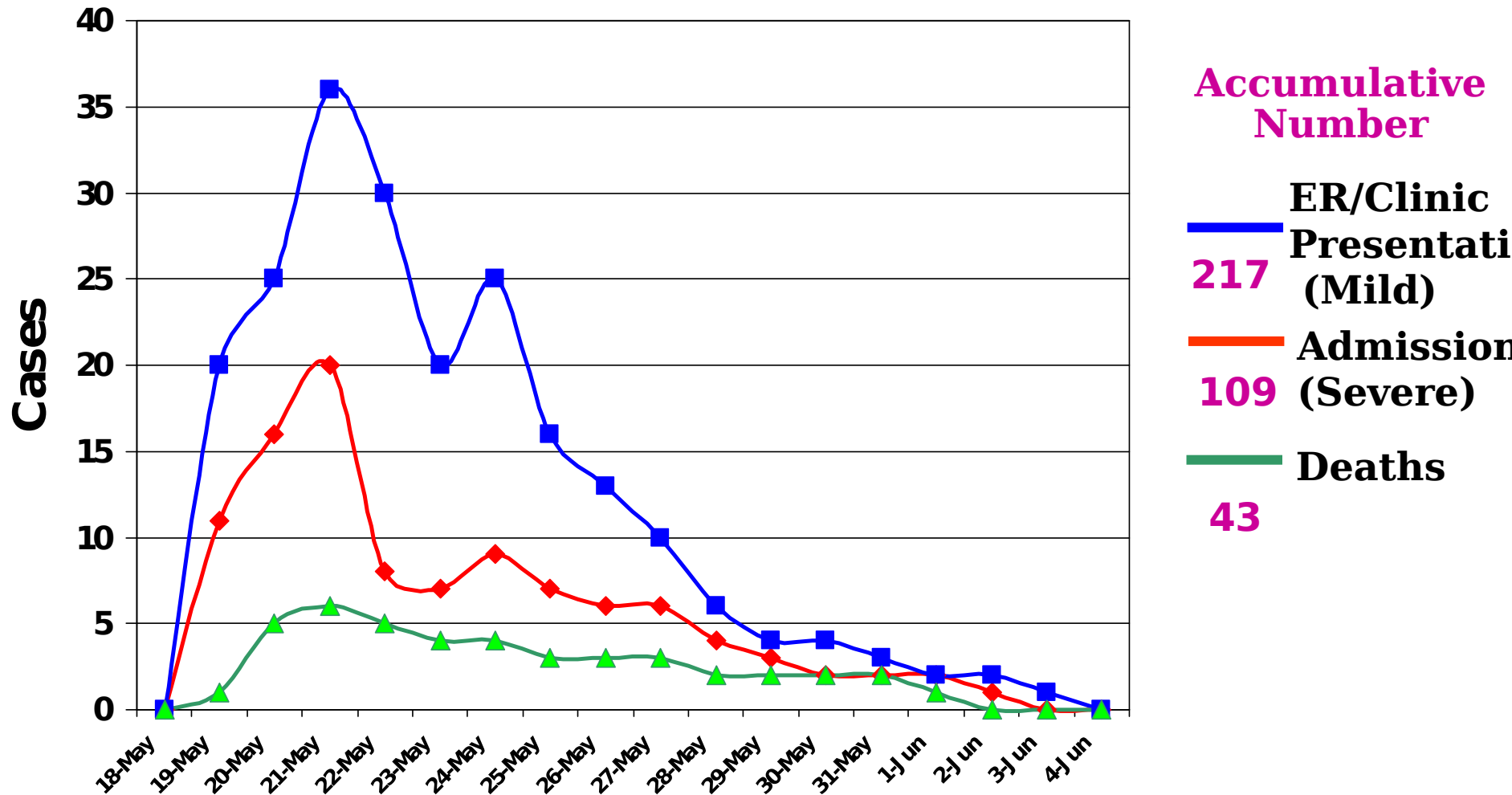
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Plague Cases - 4 Jun

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CONTAGIOUS REMAINS



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Mortuary Affairs



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Mortuary Affairs

Supervisor states that he is prepared to establish temporary morgue in accordance with plans but needs guidance regarding placement of contaminated remains.





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Mortuary Affairs

The morgue reports that if the outbreak continues they will exceed their holding capacity in both the primary and alternate mortuary warehouses.





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MEDICAL HAZARDOUS WASTE



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Laundry Contract

**Due to the outbreak,
the current laundry
contract has
cancelled.**





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Medical Biohazardous Waste



A member of the MTF staff asks how they should handle contaminated waste from treatment of plague victims.





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DECONTAMINATION



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XXX Medical Group

We have numerous patients presenting with possible exposure to the plague. Do they need to be decontaminated prior to admission?





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Backup Slides



- **Level of Care, ie., CONUS, OCONUS**
- **Number of ventilators required**
- **Proximity to other MTFs**
- **Security requirements**
- **Type of Detection/Identification - When to execute CCM assets, eg., presumptive vice confirmatory**
- **What PPE for staff**
- **How many casualties should we plan for?
25...100...250...X**
- **How many can we realistically treat in a field situation**



- **What training should be provided to physicians (Family Practice the model), nurses, med techs, lab techs, X-ray techs?**
- **Given limited AE capability, what would drive us to evacuate sentinel cases**
- **Where would they go**
- **Disposal of infectious waste in a deployed setting**
- **Management of human remains**
- **What types of specialists are necessary to support CCM**



- **What should be included on a CCM equipment package**
- **Special requirements for vehicle transport of casualties to other facilities**
- **Patient/Staff decon requirements**
- **Equipment set decon requirements post-mission**
- **What should be included in Self-Aid/Buddy Care training for non-medical personnel**